



500651

CENCD-PE-ED-TM (CENCC-ED-P/17 May 91) (200-1a) 1st End  
Mr. Warda/Emore/(312) 353-6363  
SUBJECT: DERP FUDS Inventory Project Report (INPR) for Site No.  
E05IL007300, Former NIKE Site C-54, Orland Park, Illinois

Commander, North Central Division, U.S. Army Corps of Engineers,  
111 North Canal Street, Chicago, IL 60606-7205 03 AUG 1991

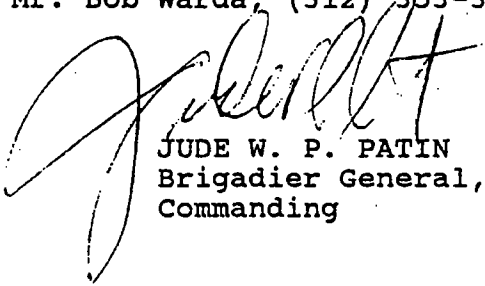
FOR

HQUSACE (CEMP-RF), WASH DC 20314-1000  
Cdr, MRD, ATTN: CEMRD-ED-E, P.O. Box 103, Downtown Station,  
Omaha, NE 68101-0103  
Cdr, HND, ATTN: CEHND-ED-PM, P.O. Box 1600, Huntsville, AL  
35807-4301

1. The INPR for Orland Park, Illinois (Former NIKE Site C-54), is forwarded for appropriate action. The site is eligible for the DERP FUDS program.
2. Resampling of ground water wells is required prior to completion of the Contamination Summary for the Site Investigation (SI). Unfiltered samples were used for the SI. This resulted in heavy metals exceeding the Federal and State Standards. It is felt that groundwater would meet all standards if retested with filtered samples. Additional Preliminary Assessment funding has been requested in lieu of recommending a HTW project.
3. Referred to Missouri River Division for information concerning the potential HTW project.
4. Referred to Huntsville Division for appropriate action on the PA file.
5. The HQ, NCD, POC is Mr. Bob Warda, (312) 353-3679.

3 Encls  
nc

CF:  
CENCE-ED-D  
CENCB-ED-HQ

  
JUDE W. P. PATIN  
Brigadier General, USA  
Commanding

SITE SURVEY SUMMARY SHEET  
FOR  
DERP FUDS SITE NO. E05IL007300  
FORMER NIKE SITE C-54 - LAUNCH AREA  
ORLAND PARK, COOK COUNTY, ILLINOIS  
May 1991

**SITE NAME:** The site was formerly known as NIKE Site C-54. The site is currently known as the Orland Park Public Works Garage and the U.S. Army Reserve Area Organization Maintenance Shop No. 45. The Control and Housing Area is included in a separate report.

**LOCATION:** The site is located in the Village of Orland Park, Cook County, Illinois. The site is contained within Sections 16 and 17, Township 36 North, Range 12 East of the 3rd Principal Meridian. The address is 15710 LaGrange Road, Orland Park, Illinois, 60462. Reference is made to the attached site and location maps.

**SITE HISTORY:** A total of 17.45 acres fee (Launch Area), 36.91 acres lease (Control and Housing Area), 0.46 acres license (sewer lines), and 186.65 acres easement were acquired between 1955 and 1958 for the establishment and operation of NIKE Battery C-54 by the Department of the Army, 5th Region RADCOM. Three underground missile pits, barracks, a missile ready room, a generator, administration, operation, support buildings and radar towers were constructed on the site. After the site was reported excess to the General Services Administration (GSA) in December 1964, the lease agreement was terminated and 8.31 acres were sold by Quit-claim Deed to the Village of Orland Park on 26 April 1971. The Department of the Army retained 9.14 acres fee for Army Reserve functions.

Of the original 186.65 acres of easements, the Department of the Army retained 0.80 acres for utility installations which provide support for a nearby Army Reserve maintenance shop. According to a GSA Disposal Plan dated 24 July 1970, most of the remaining easements were line-of-sight easements and were offered to the owners of the underlying land for purchase.

**SITE VISIT:** There have been several site inspections by Chicago District personnel between 1986 and 1989. Discussions with the owner representative have been conducted. Records of these inspections and discussions are on file with CENCC-ED-P.

**CATEGORY OF HAZARDS:** HTW, BD/DR.

**PROJECT DESCRIPTION:**

a. HTW No HTW project is recommended at this time. The Site Investigation (SI) reported values of heavy metals in the ground-

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water that exceed maximum contaminant levels (MCLs) for drinking water. However, it is probable that the MCLs were exceeded because unfiltered samples rather than filtered samples were analyzed. MCLs are generally applied to monitoring well samples that have been filtered, since heavy metals adsorb onto the surface of iron and/or manganese hydroxides. The groundwater and the silo water are therefore being resampled to obtain heavy metal concentrations in filtered rather than nonfiltered water. The results will then be analyzed to determine if there is a need for remediation at the site, and a revised project summary sheet will be forwarded. The attached Environmental Evaluation summarizes the test results from the Site Investigation.

b. BD/DR One silo is not proposed for remediation because the Village of Orland Park uses it as an emergency operations center. The doors on the two remaining launching silos pose a falling hazard. It is recommended that the silo hatches be covered, and that doors and any vents be blocked. The hydraulic fluid from the silo hatches will be drained and disposed.

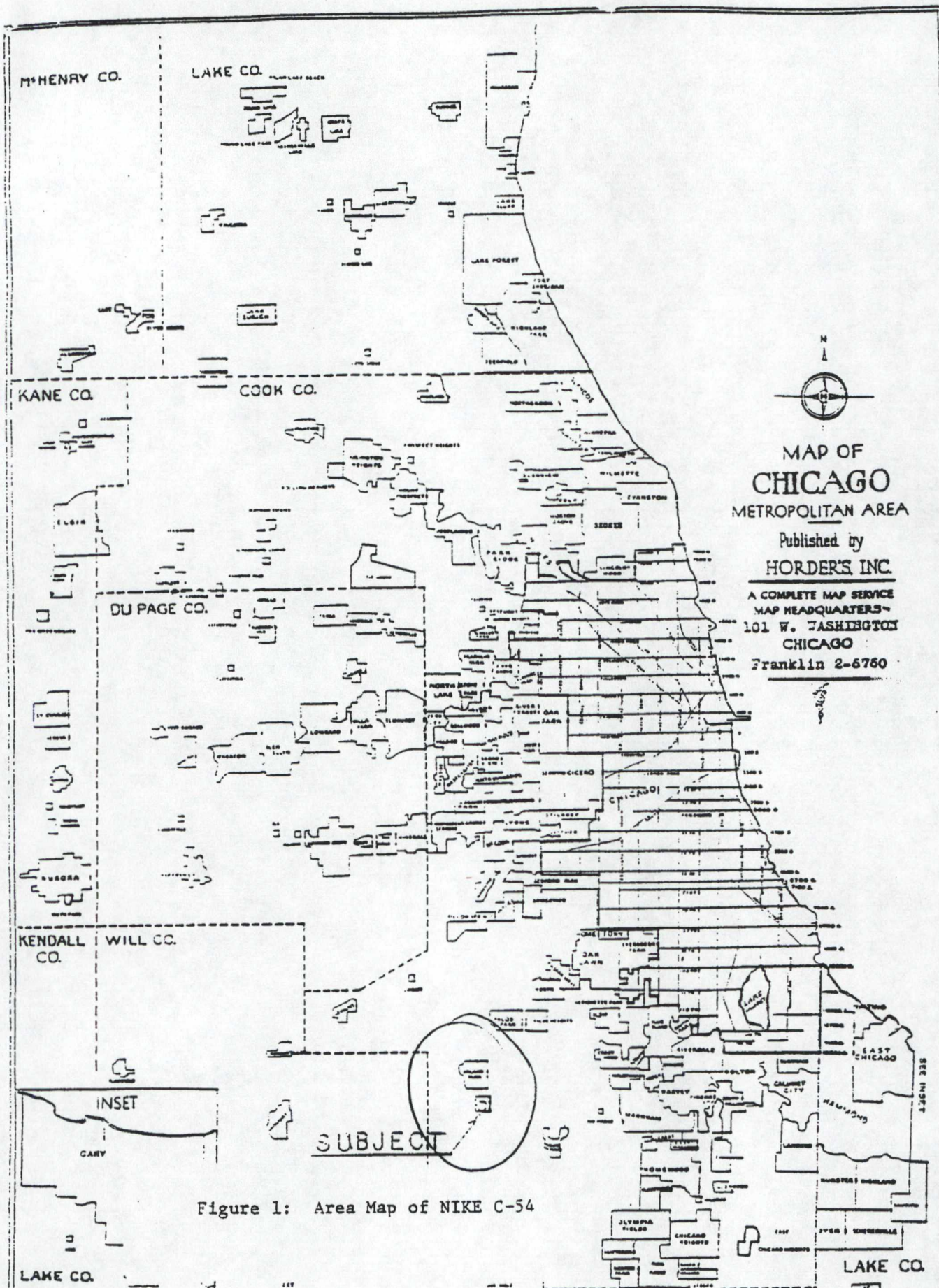
AVAILABLE RECORDS AND REPORTS: The following documents and reports are available through CENCC-ED-P:

- a. Real estate acquisition and disposal documents.
- b. Inventory Phase Report for the Housing and Control Area.
- c. Final Site Investigation (SI) prepared under the direction of CENCB dated January 1991.
- d. Chemical Contamination Summary for the Former Nike Battery C-54 Site in Orland Park, Illinois from CENCB dated April 1991.

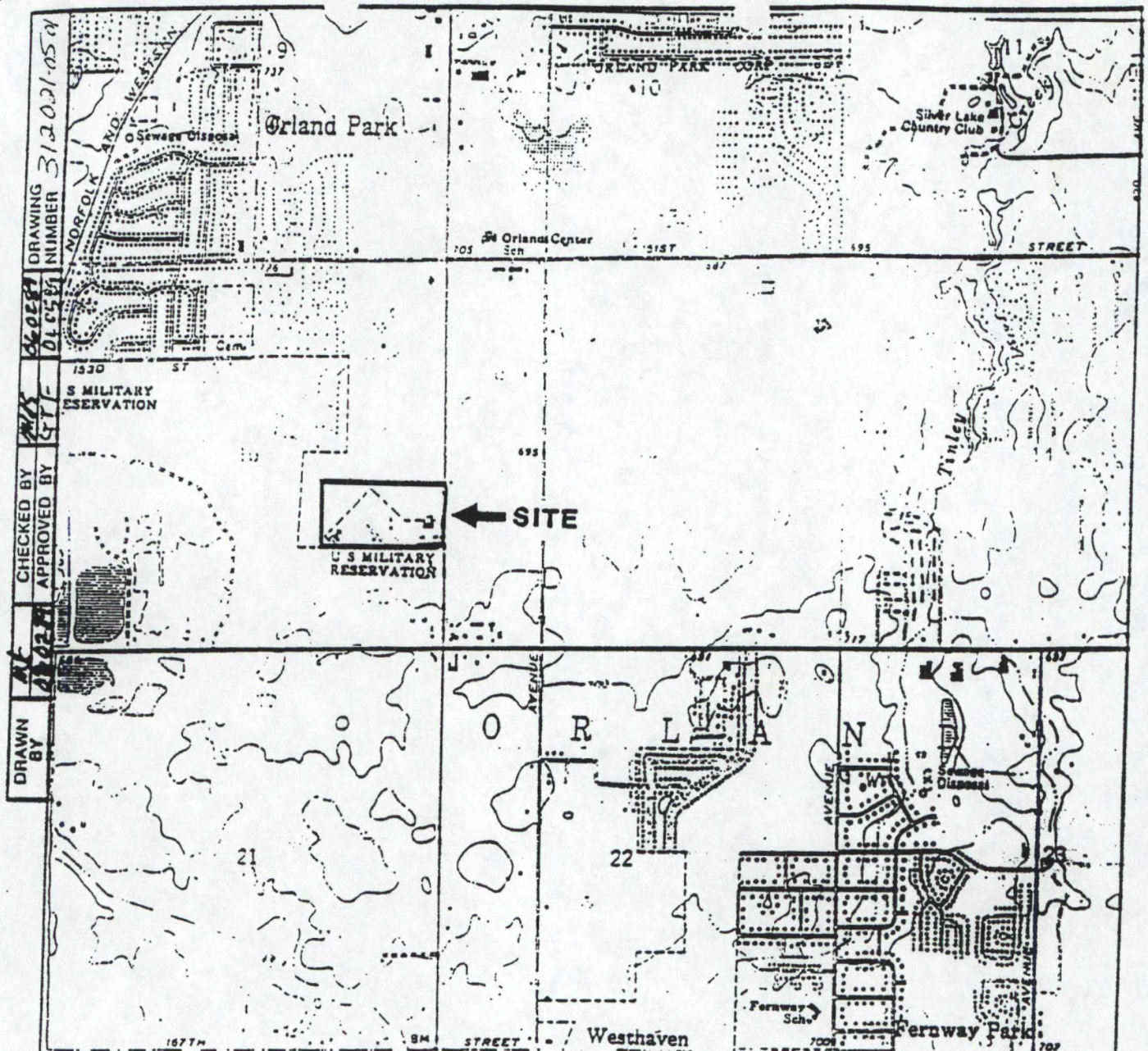
POC/DISTRICT: Timothy E. Kelleher, CENCC-ED-P, 312-886-0454.

POC/LOCAL: John Luchsinger, Village of Orland Park, Maintenance Supervisor, (708) 403-6100.

SPECIAL CONSIDERATIONS: For the HTW hazard, the Village of Orland Park obtains its drinking water from Lake Michigan. For the BD/DR hazard, two workmen were seriously injured at a NIKE site when the silo doors suddenly opened beneath them.







0 1/4 1/2  
SCALE IN MILES



Source: Tinley Park Quadrangle  
Illinois 7.5 Minute Series (topographic)  
1963, photorevised 1973, 1980  
© 1984 IT CORPORATION  
ALL COPYRIGHTS RESERVED

"Do Not Scale This Drawing"



Figure 2  
FORMER NIKE BATTERY C-54  
ORLAND PARK, ILLINOIS

SITE LOCATION MAP  
PREPARED FOR  
U.S. ARMY CORPS OF ENGINEERS  
BUFFALO DISTRICT

... Creating a Safer Tomorrow

DEFENSE ENVIRONMENTAL RESTORATION PROGRAM  
FORMERLY USED DEFENSE SITES  
FINDINGS AND DETERMINATION OF ELIGIBILITY

FORMER NIKE SITE C-54 - LAUNCH AREA  
ORLAND PARK, COOK COUNTY, ILLINOIS  
SITE NO. E05IL007300

FINDINGS OF FACT

1. The United States of America acquired 17.45 acres in fee; 36.91 acres leasehold; 0.46 acres license; and 186.65 acres easement for the establishment and operation of NIKE Site C-54. The major portion of the facility was acquired through purchase and condemnation between 1955 and 1958. The Control and Housing Area comprised 36.91 lease acres, the Launch Area 14.26 fee acres, with line-of-sight, safety, and utility easements comprising the balance. Acquisition was through purchase and condemnation.

2. The facility, officially known as NIKE Battery C-54, was purchased for and used by the Department of the Army, 5th Region RADCOM. During the period of Army occupation, the facility was used for guided missile defense against enemy aircraft within the Chicago metropolitan area. Structures built at the facility included three missile launch pits, barracks, administration buildings, and various operations and support buildings. The site was not under other than Department of Defense (DoD) control during the period of DoD ownership and use.

3. The lease agreement for the 36.91 acre Control and Housing Area was terminated with the Lessor, Oak Park National Bank, on 31 December 1963. The lease specifically excluded restoration of the premises. A portion of the Launch Area comprising 8.31 fee acres was no longer needed by Department of the Army and reported excess to General Services Administration (GSA) on 31 December 1964. GSA determined the area surplus on 17 February 1971. This 8.31 acre fee portion of the Launch Area was subsequently sold by Quitclaim Deed dated 26 April 1971 to the Village of Orland Park, Illinois. There is no recapture clause in the Quitclaim Deed (QD). The QD gave the grantee shared easement rights for access and public utilities, and the right to use jointly with the United States the existing access road upon and over the tract retained by the United States. The remaining 9.14 acres fee were retained by the Department of the Army for Army Reserve functions. Documentation concerning ownership of the 0.46 acre license for sewer purposes status could not be located. The sewer line is believed to still be in use by the Village of Orland Park.

Of the original 186.65 acres of easements, the Department of the Army retained 0.80 acres for utility installations which provide support for a nearby Army Reserve maintenance shop. According to a GSA Disposal Plan dated 24 July 1970, most of the remaining easements were line-of-sight easements and were offered to the owners of the underlying land for purchase by them.

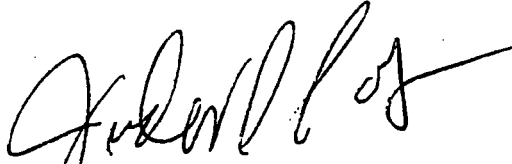
SITE NO. E05IL007300

DETERMINATION

Based upon the foregoing Findings of Fact the site has been determined to be formerly used by DoD. With the exception of the 9.14 acre U.S. Army Reserve portion, the site is eligible for the Defense Environmental Restoration Program - Formerly Used Defense Sites, established under 10 U.S.C. 2701 et seq.

3 Aug 91

DATE



JUDE W. P. PATIN  
Brigadier General, USA  
Commander and Division Engineer

PROJECT SUMMARY SHEET  
FOR  
DERP FUDS HTW PROJECT NO. E05IL007301  
FORMER NIKE SITE C-54 - LAUNCH AREA  
ORLAND PARK, COOK COUNTY, ILLINOIS  
May 1991

PROJECT DESCRIPTION: No project is recommended at this time. However, the groundwater and silo water will be resampled so that filtered samples may be analyzed. The need for a HTW remediation project will be evaluated after review of the sample results, and a revised project summary sheet will be forwarded.

PROJECT ELIGIBILITY: The Department of the Army owned the site and constructed facilities for the operation of NIKE Battery C-54 from 1955 to 1963. There may be groundwater contamination at the site. Two of the three silos contain runoff and seepage water that may be contaminated. The Village of Orland Park currently stores various items that may cause or contribute to contamination at the site, including junked cars, waste oil, drums that previously contained asphalt sealant, road salt piles, a street sweeper waste pit and oil-filled plastic jugs. It may therefore be difficult to determine the source of any pollutants at the site.

POLICY CONSIDERATIONS: None.

PROPOSED ACTIVITIES: None.

SPECIAL CONSIDERATIONS: The Village of Orland Park obtains its drinking water supply from Lake Michigan.

LOCAL POC: John Luchsinger, Village of Orland Park, Maintenance Supervisor, (708) 403-6100.

DISTRICT POC: Timothy E. Kelleher, CENCC-ED-P, 312-886-0454.

EPA FORM 2070-12: Attached.


Encl 3



**JSWER DIRECTIVE 9345.0-01**  
**FORMER NIKE - HERCULES SITE C-54 (ORLAND PARK, ILLINOIS)**  
**SITE NO. G05IL007300**

<b>EPA</b>	<b>POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT</b>		<b>I. IDENTIFICATION</b>	
			01 STATE	02 SITE NUMBER
<b>PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS</b>				
<b>1. HAZARDOUS CONDITIONS AND INCIDENTS</b>				
01 <input checked="" type="checkbox"/> A GROUNDWATER CONTAMINATION		02 <input type="checkbox"/> OBSERVED (DATE _____)		<input checked="" type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____		04 NARRATIVE DESCRIPTION		
Arsenic, barium, cadmium, chromium and lead exceed the MCLs for drinking water in unfiltered samples. Water is being resampled to analyze filtered samples.				
01 <input type="checkbox"/> B SURFACE WATER CONTAMINATION		02 <input type="checkbox"/> OBSERVED (DATE _____)		<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____		04 NARRATIVE DESCRIPTION		
None Noted				
01 <input type="checkbox"/> C CONTAMINATION OF AIR		02 <input type="checkbox"/> OBSERVED (DATE _____)		<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____		04 NARRATIVE DESCRIPTION		
None Noted				
01 <input type="checkbox"/> D FIRE EXPLOSIVE CONDITIONS		02 <input type="checkbox"/> OBSERVED (DATE _____)		<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____		04 NARRATIVE DESCRIPTION		
None Noted				
01 <input checked="" type="checkbox"/> E DIRECT CONTACT		02 <input type="checkbox"/> OBSERVED (DATE _____)		<input checked="" type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____		04 NARRATIVE DESCRIPTION		
Direct contact through dermal absorption of contaminated soils.				
01 <input checked="" type="checkbox"/> F CONTAMINATION OF SOIL		02 <input checked="" type="checkbox"/> OBSERVED (DATE 0/80)		<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
03 AREA POTENTIALLY AFFECTED _____		04 NARRATIVE DESCRIPTION		
Levels of TPH less than 80 ppm. Arsenic, cadmium, lead and mercury exceed the avg conc. of elements in US soils but are well within the conc. range.				
01 <input type="checkbox"/> G DRINKING WATER CONTAMINATION		02 <input type="checkbox"/> OBSERVED (DATE _____)		<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____		04 NARRATIVE DESCRIPTION		
None Noted. Orland Park uses Lake Michigan Water for drinking water.				
01 <input type="checkbox"/> H WORKER EXPOSURE/INJURY		02 <input type="checkbox"/> OBSERVED (DATE _____)		<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____		04 NARRATIVE DESCRIPTION		
None Noted.				
01 <input type="checkbox"/> I POPULATION EXPOSURE/INJURY		02 <input type="checkbox"/> OBSERVED (DATE _____)		<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____		04 NARRATIVE DESCRIPTION		
None Noted.				

**JSWER DIRECTIVE 9345.0-01**  
**FORMER NIKE - HERCULES SITE C-54 (ORLAND PARK, ILLINOIS)**  
**SITE NO. G05IL007300**

	<b>POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT</b>		<b>I. IDENTIFICATION</b>	
			<b>01 STATE</b>	<b>02 SITE NUMBER</b>
<b>PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS</b>				
<b>II. HAZARDOUS CONDITIONS AND INCIDENTS</b> <small>(Continued)</small>				
<b>01 <input type="checkbox"/> J. DAMAGE TO FLORA</b> <b>04 NARRATIVE DESCRIPTION</b>			<b>02 <input type="checkbox"/> OBSERVED (DATE _____)</b> <b><input type="checkbox"/> POTENTIAL</b> <b><input type="checkbox"/> ALLEGED</b>	
None Noted.				
<b>01 <input type="checkbox"/> K. DAMAGE TO FAUNA</b> <b>04 NARRATIVE DESCRIPTION</b> <small>(Include names of species)</small>			<b>02 <input type="checkbox"/> OBSERVED (DATE _____)</b> <b><input type="checkbox"/> POTENTIAL</b> <b><input type="checkbox"/> ALLEGED</b>	
None Noted.				
<b>01 <input type="checkbox"/> L. CONTAMINATION OF FOOD CHAIN</b> <b>04 NARRATIVE DESCRIPTION</b>			<b>02 <input type="checkbox"/> OBSERVED (DATE _____)</b> <b><input type="checkbox"/> POTENTIAL</b> <b><input type="checkbox"/> ALLEGED</b>	
None Noted.				
<b>01 <input checked="" type="checkbox"/> M. UNSTABLE CONTAINMENT OF WASTES</b> <small>Leakage from existing underground storage tanks</small> <b>03 POPULATION POTENTIALLY AFFECTED: _____</b>			<b>02 <input checked="" type="checkbox"/> OBSERVED (DATE <u>9/89</u>)</b> <b><input type="checkbox"/> POTENTIAL</b> <b><input type="checkbox"/> ALLEGED</b>	
<b>04 NARRATIVE DESCRIPTION</b> Waste pit, drums with waste oil, junked cars on site.				
<b>01 <input type="checkbox"/> N. DAMAGE TO OFFSITE PROPERTY</b> <b>04 NARRATIVE DESCRIPTION</b>			<b>02 <input type="checkbox"/> OBSERVED (DATE _____)</b> <b><input type="checkbox"/> POTENTIAL</b> <b><input type="checkbox"/> ALLEGED</b>	
None Noted.				
<b>01 <input type="checkbox"/> O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs</b> <b>04 NARRATIVE DESCRIPTION</b>			<b>02 <input type="checkbox"/> OBSERVED (DATE _____)</b> <b><input type="checkbox"/> POTENTIAL</b> <b><input type="checkbox"/> ALLEGED</b>	
None Noted.				
<b>01 <input type="checkbox"/> P. ILLEGAL UNAUTHORIZED DUMPING</b> <b>04 NARRATIVE DESCRIPTION</b>			<b>02 <input type="checkbox"/> OBSERVED (DATE _____)</b> <b><input type="checkbox"/> POTENTIAL</b> <b><input type="checkbox"/> ALLEGED</b>	
None Noted.				
<b>03 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL OR ALLEGED HAZARDS</b> Silo doors pose possible falling hazard.				
<b>III. TOTAL POPULATION POTENTIALLY AFFECTED: _____</b>				
<b>IV. COMMENTS</b>   				
<b>V. SOURCES OF INFORMATION</b> <small>(Can include references to other reports, interviews, etc.)</small>   				

PROJECT SUMMARY SHEET  
FOR  
DERP FUDS BD/DR PROJECT NO. E05IL007302  
FORMER NIKE SITE C-54 - LAUNCH AREA  
ORLAND PARK, COOK COUNTY, ILLINOIS  
May 1991

**PROJECT DESCRIPTION:** It is recommended that the hatches on two launch silos be bolted down with steel plates to prevent accidents. Access doors and vents should also be blocked. The Village of Orland Park uses the third silo as an emergency operations center.

**PROJECT ELIGIBILITY:** The Department of the Army owned the site and constructed facilities including the launching silos for the operation of NIKE Battery C-54 from 1955 to 1963. The silo hatches pose a structural hazard. The hazard existed at the time DoD usage ceased if the hydraulic systems were not drained and since the hatches were not braced or covered at the time of closure. The BD/DR Project Summary Sheet Checklist is attached.

**POLICY CONSIDERATIONS:** The two empty silos proposed for remediation have not been beneficially used by the owner. Since the Village of Orland Park uses the third silo as an emergency operations center, the third silo is not proposed for remediation. The silos have not been owned by a private interest since DoD usage. The proposed remedial actions do not address asbestos containing materials (ACM).

**PROPOSED ACTIVITIES:** Cover silo hatches, block access to doors and vents, and drain any fluid still remaining in the hydraulic system of the two unoccupied silos.

**SPECIAL CONSIDERATIONS:**

- a. Two workmen were seriously injured at a NIKE site when the silo doors suddenly opened beneath them.
- b. The silo doors will not be covered until analytical results from the groundwater and silo water resampling are available. If the water is contaminated, access to the silos may be necessary.
- c. The site is subject to moderate year-round use by Village of Orland Park employees.

**LOCAL POC:** John Luchsinger, Village of Orland Park, Maintenance Supervisor, (708) 403-6100.

**CURRENT OWNER DESIRES:** Mr. Luchsinger concurs with the proposed action to cover the silo doors.

DISTRICT POC: Timothy E. Kelleher, CENCC-ED-P, 312-886-0454.

DD Form 1391: Attached.

CURRENT OWNERSHIP: The Village of Orland Park owns the launch silos.



1. COMPONENT <b>ARMY</b>		FY 19 <u>91</u> <b>MILITARY CONSTRUCTION PROJECT DATA</b>		2. DATE 16 April 1991	
3. INSTALLATION AND LOCATION Former NIKE Site C-54			4. PROJECT TITLE DERP FUDS		
5. PROGRAM ELEMENT E05IL007302	6. CATEGORY CODE BD/DR	7. PROJECT NUMBER E05IL007300	8. PROJECT COST (\$000) 25.2		
9. COST ESTIMATES					
ITEM		U/M	QUANTITY	UNIT COST	COST (\$000)
Construction Cost		2s	each	7.7	15.4
Contingencies (10%)					1.5
S&A (8.0%)					1.2
Total Construction CWE					18.1
Design (6%)					1.1
Excludable Design Cost					6.0
TOTAL IMPLEMENTATION COST					25.2
10. DESCRIPTION OF PROPOSED CONSTRUCTION					
<ol style="list-style-type: none"> <li>1. BD/DR includes the bolting of two sets of launching silo hatches with steel plates, and the removal and disposal of hydraulic fluid from the silo doors. Access doors and vents will also be blocked.</li> <li>2. Excludable design costs include Right of Entry for construction, site visit/surveys, permits and alternative design and disposal evaluation for fluid disposal.</li> </ol>					

BD/DR PROJECT SUMMARY SHEET CHECKLIST  
FOR  
DERP FUDS BD/DR PROJECT NO. E05IL007302

True or False

1. F The title transfer document which conveyed the site from DoD or GSA specifically requires the Government to restore the site. (If true, provide details under Project Eligibility.)
2. T An owner, subsequent to DoD usage, has not been compensated by the Government in lieu of site restoration. (If false, provide details under Policy Considerations.)
3. T The title transfer document which conveyed the site from DoD or GSA does not absolve the Government from site restoration. (If false, provide details under Policy Considerations.)
4. T USACE can obtain a right of entry to the site. (If false, provide details under Policy Considerations.)
5. T The site has not been owned by a private interest since DoD usage. (Address under Policy Considerations regardless of whether true or false.)
6. T Execution of the project would not primarily benefit private interests. (If false, provide details under Policy Considerations.)
7.    Hazard(s) (Specify under Project Eligibility):
  - a. ☒ Structural.
  - b.    Cave-in or engulfment.
  - c.    Climbing.
  - d.    Drowning.
  - e.    Other.
8. T The hazard(s) resulted from DoD activities. (Provide details under Project Eligibility regardless of whether true or false.)
9. T The hazard(s) resulted from military activities rather than civil works activities. (If false, provide details under Policy Considerations.)
10. T The hazard(s) existed at the time DoD usage ceased. (Provide details under Project Eligibility regardless of whether true or false.)

11. T The hazard(s) still exists. Owners cannot be reimbursed for any response activities. (If false, provide details under Policy Considerations.)

12. T The structure(s) was not altered or beneficially used by owners subsequent to DoD usage. (Address under Policy Considerations regardless of whether true or false.)

13. T The project does not involve partial demolition of a structure (must be all or nothing.) (If false, provide details under Policy Considerations.)

14. T The project does not address asbestos containing materials (ACM), except where part of and incidental to a proposed project. (Address under Policy Considerations regardless of whether true or false.)

ENVIRONMENTAL EVALUATION  
OF NIKE C-54 SITE INVESTIGATION

The Buffalo District initiated a Site Investigation (SI) of the site due to the possibility of contamination of subsurface soil, groundwater, surface water and silo water. Figure 3 shows the silo locations and the sampling locations.

Groundwater

Table 1 compares the concentration of metals detected in the groundwater to the maximum contaminant levels (MCLs) for drinking water. Levels of arsenic, barium, cadmium, chromium and lead exceed their respective MCLs. Neither total petroleum hydrocarbons (TPH) nor volatile organic compounds (VOCs) were detected in any of the groundwater samples.

However, the inorganic analyses were performed on unfiltered samples. MCLs are generally applied to monitoring well samples that have been filtered, since heavy metals adsorb onto the surface of iron and/or manganese hydroxides. The groundwater and silo water are being resampled to determine the levels of dissolved heavy metals.

Surface Water

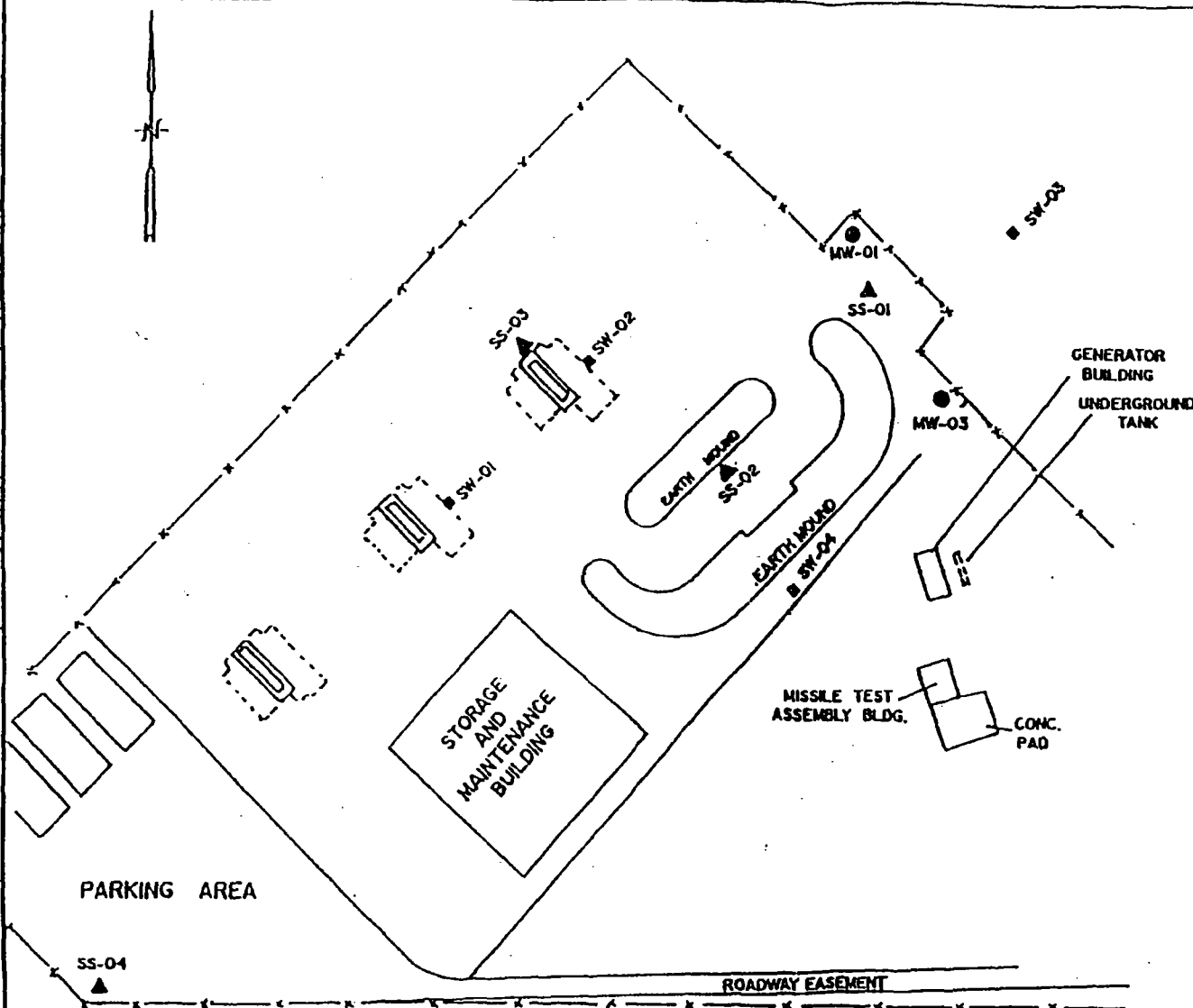
Concentration of metals in the surface water samples do not exceed the MCLs. A very low level of TPH was detected in one sample (0.3 ppm - just above the detection limit of 0.2 ppm for TPH analysis of water samples). No VOCs were found in any of the surface water samples. Table 2 contains a summary of the surface water analysis.

Silo Water

Two of the three launching silos contain water. Table 2 compares the concentration of metals detected in the silo water to the MCLs for drinking water. The amounts of cadmium, chromium, lead and silver greatly exceed their respective MCLs (in the range of 1.2 times the MCL for silver to 540 times the MCL for lead). 54 ppm TPH were detected from silo No. 2. This may indicate leaking of hydraulic fluids since the TPH value in the silo water is much greater than in the groundwater. No VOCs were detected in either of the silo water samples.

The split sample analyzed by Missouri River Division's laboratory for quality assurance did not exceed the MCLs for lead and cadmium.





- LEGEND:
- (MW) ● MONITOR WELL
  - (SS) ▲ SOIL SAMPLE LOCATION
  - (SW) ■ SURFACE WATER SAMPLE LOCATION
  - (UST) [ ] UNDERGROUND STORAGE TANK

**FIGURE 3**  
**ORLAND PARK**  
**FORMER NIKE BATTERY C-54**  
**SITE MAP INCLUDING**  
**MONITOR WELL AND**  
**SAMPLING LOCATIONS**  
**PREPARED FOR:**  
**U.S. ARMY CORPS OF ENGINEERS**  
**BUFFALO DISTRICT.**



TABLE 1  
SUMMARY OF GROUND WATER ANALYSIS\*  
FORMER NIKE BATTERY C-54  
ORLAND PARK, ILLINOIS

Parameter	MCL	C-54-MW01	C-54-MW03	C-54-MW04 (QC Split for MW-01)	C-54-Driller's Water (Water Source)
<u>Metals</u>					
(mg/l) (1)					
Arsenic	0.05	0.04/0.04	0.07	0.08	
Barium	1.00	1.1/1.2 (2)	0.4	0.5	ND
Cadmium	0.01	0.039/0.43	0.024	0.031	ND
Chromium	0.05	0.20/0.20	0.19	0.23	ND
Lead	0.05	0.27/0.26	0.23	0.31	ND
<hr/>					
<u>Total Petroleum</u>		ND	ND	ND	ND
<u>Hydrocarbons</u>					
<hr/>					
<u>Volatile Hazardous</u>					
<u>Substance List Compounds</u>					
(ug/kg) (3)					
Bromodichloromethane		ND	ND	ND	9
Chloroform		ND	ND	ND	17

(1) mg/l = milligrams per liter or parts per million

(2) This sample was analyzed in duplicate

(3) ug/kg = micrograms per kilogram or parts per billion

ND The compound was not detected at or above the detection limit

\* The complete analytical data package is presented as Appendix F

MCL Maximum Contaminant Level

TABLE 2  
SUMMARY OF SILO AND SURFACE WATER ANALYSIS\*  
FORMER NIKE BATTERY C-54  
ORLAND PARK, ILLINOIS

Parameter	MCL	C-54-SW01 (Launch Unit #2)	C-54-SW02 <sup>(2)</sup> (Launch Unit #3)	C-54-SW03 (NE of Site)	C-54-SW04 (On Site)	C-54-SW09 (QC Split of SW02)	C-54-SW11
<u>Metals</u> (mg/l) <sup>(1)</sup>							
Cadmium	0.01	0.12	ND/ND	ND	ND	ND	ND
Chromium	0.05	0.11	0.01/0.01	0.2	0.02	0.01	ND
Lead	0.05	27	ND/ND	ND	ND	ND	ND
Silver	0.05	0.06	ND/ND	ND	ND	ND	ND
<u>Total Petroleum</u> <u>Hydrocarbons</u> (mg/l)							
		54	3.8	0.3	ND	2.7	ND
<u>Volatatile Hazardous</u> <u>Substance List Compounds</u> (ug/kg) <sup>(3)</sup>							
		No VOCs were found in any sample					

(1) mg/l = milligrams per liter or parts per million

(2) This sample was analyzed in duplicate

(3) ug/kg = micrograms per kilogram or parts per billion

ND The compound was not detected at or above the detection limit

MCL MCL = Maximum Contaminant Level

\* The complete analytical data package is presented as Appendix F

### Soils

Table 3 summarizes the soil analysis results. All of the heavy metals were within the range of the typical U.S. soil concentrations. All soil samples contained levels of TPH less than 80 ppm (mg/kg). The detection limit for TPH in this soil analysis was 17 ppm. Toluene, a common laboratory contaminant, was the only VOC detected in any of the soil samples. This sample was taken from the parking lot near the site entrance.



TABLE 3  
SUMMARY OF SOILS ANALYSIS\*  
FORMER NIKE BATTERY C--54  
ORLAND PARK, ILLINOIS

Parameter	C-54-SS01	C-54-SS02	C-54-SS03	C-54-SS04	C-54-SS05	Average Concentrations of Elements in US Soils <sup>(4)</sup>	
	Acid Storage Shed	Refueling Area	Near Northern Silo	Near Site Entrance	QC Split of SS-04	Average Concentration	Concentration Range
<u>Metals</u> (mg/kg) <sup>(1)</sup>							
Arsenic	8/8 <sup>(2)</sup>	9	90	6	14	5.2	<0.1097
Barium	70/60	40	60	60	40	490	70-5,000
Cadmium	2.7/2.6	3.7	1.7	2.3	1.3	0.66 <sup>(3)</sup>	0.01-22 <sup>(5)</sup>
Chromium	18/17	18	14	19	11	37	3-2,000
Lead	18/18	24	23	16	22	16	<10-700
Mercury	ND	ND	0.3	ND	ND	.058	<0.01-46
Silver	1/1	3	ND	1	ND	---	---
<u>Total Petroleum</u> <u>Hydrocarbons</u> (mg/kg) <sup>(1)</sup>							
	29	ND	72	80	36		
<u>Volatile Hazardous</u> <u>Substance List Compounds</u> (ug/kg) <sup>(1)</sup>							
Toluene	ND	ND	ND	51	23		

(1) mg/kg = milligrams per kilogram or parts per million

(2) This sample was analyzed in duplicate

(3) ug/kg = micrograms per kilogram or parts per billion

(4) Shacklette, et al., "Elemental Composition of Surficial Materials in the Conterminous United States." Geological Survey Professional Paper 574-D, United States Government Printing Office, Washington, DC, 1971.

(5) Friberg, L.M., et. al., 1974, Cadmium in Environment, 2nd Edition CRC Press.

ND The compound was not detected at or above the indicated detection limit.

\* The complete analytical data package is presented as Appendix F.

CENCC-ED-Pm

10 APR 1991

CENCB-PE-HQ (200)

MEMORANDUM FOR Commander, North Central Division, ATTN:  
Bob Warda CENCD-ED-TM, 536 South Clark Street,  
Chicago, Illinois 60605-1592

SUBJECT: Chemical Contamination Summary for the Former Nike  
Battery C-54 Site in Orland Park, Illinois

1. Transmitted for your use is the Chemical Contamination Summary for the Former Nike Battery C-54 Site in Orland Park, Illinois. The Site Number is E05IL007300.
2. I have forwarded a copy of the memorandum to Tim Kelleher, CENCC-ED-TM.
3. My point of contact for this matter is Mr. Richard Leonard of my Water Quality Section, who may be reached at (716) 879-4270 (FTS 292-4270).

FOR THE COMMANDER:

Enclosure

GEORGE B. BROOKS, P.E.  
Chief, Engineering & Planning Division

**Chemical Contamination Summary  
Former Nike Battery C-54  
Orland Park, Illinois**

1. A contamination evaluation was performed at the Former Nike Battery C-54 site in Orland Park, Illinois. The site is owned by the Village of Orland Park. The contamination evaluation included a records review and visual site inspection along with the collection of several water and soil samples. Two groundwater monitoring wells were installed and samples were taken from each well. Runoff water samples were taken from two former launch silos and surface water samples were taken from two swampy areas on the northern half of the site. Four soil samples were collected from shallow borings, including one background sample. All samples were analyzed for total petroleum hydrocarbons, total metals, and volatile organics.

2. Well installation and sampling were carried out as planned with the exception of the installation of only two monitoring wells rather than three. Groundwater was found at various depths; well MW-01 encountered water at 11 feet, well MW-02 was drilled to 50 feet without hitting any water, and well MW-03 hit water at 27 feet. Analytical results from the sampling program indicated the following: levels of arsenic, cadmium, chromium and lead detected in the groundwater samples from both wells

were near or greater than the MCLs. All four soil samples contained elevated concentrations of arsenic, barium, cadmium, chromium, lead and silver. Total petroleum hydrocarbons were detected at levels between 29 ppm and 80 ppm in three of the four soil samples including the background sample. Toluene was the only volatile organic compound detected in the soil samples. The silo water sample from launch unit #2 contained levels of cadmium, chromium, lead and silver that were greater than the MCLs. Elevated concentrations of total petroleum hydrocarbons were detected in samples from both launch units #2 and #3. The surface water samples did not contain metals above the MCLs. Trace amounts of total petroleum hydrocarbons were detected in only one of the surface water samples.

3. The contamination evaluation performed at the site indicates that contamination may be present in the groundwater, soils, and silo water. Although contamination is present at the site, further investigation would be required to define the source(s) of contamination. Defining the source(s) of these contaminants would be difficult due to the length of time which has elapsed since the DOD use of the site and the variety of uses that the Village of Orland Park has found for the site.

#### 4. GROUNDWATER

The results of the inorganic analyses for groundwater were compared to Maximum Contaminant Levels (MCL) which are

enforceable standards for drinking water. Table 5 contains a summary of the occurrence and concentration of metals which were detected and those that exceed MCLs in one or more wells for unfiltered samples.

5. The MCL for arsenic (0.05 mg/l) was exceeded in well MW-03 at a concentration of 0.07 mg/l (0.08 mg/l in QC split). The standard for barium (1.00 mg/l) was exceeded in MW-01. The reported concentration was 1.1 mg/l (1.2 mg/l in duplicate). The concentration of cadmium exceeded the MCL (0.01 mg/l) in both wells ranging from 0.024 mg/l to 0.043 mg/l. The MCL for chromium is 0.05 mg/l. Detected concentrations of 0.2 mg/l (0.2 mg/l in duplicate) in MW-01 and 0.19 mg/l (0.23 mg/l in QC split) in MW-03 exceeded the MCL which is based upon the hexavalent chromium ion. Total chromium was analyzed in these samples, therefore, the concentration of  $\text{Cr}^{+6}$  may be lower. Lead found in concentrations ranging from 0.23 mg/l to 0.31 mg/l exceeded the MCL of 0.05 mg/l in both wells.

6. The inorganic analyses were performed on unfiltered samples. MCLs are generally applied to monitoring well samples that have been filtered through a 0.45 micron filter. Iron and manganese are present in these waters at relatively high levels and may represent particles of iron and/or manganese hydroxides that coprecipitate and sorb heavy metals on their surfaces.

Acidification of the sample dissolves these particles and releases the metals into solution resulting in elevated levels of metals.

7. Total petroleum hydrocarbons as well as volatile organic compounds were not detected in any of the groundwater samples (Table 5). The driller's water, obtained from the Village of Orland Park Public Works Water Source, contained amounts of bromodichloromethane and chloroform that exceeded the MCL for total trihalomethanes which includes the above compounds (Table 5).

8. The QC samples analyzed include a rinsate from the groundwater sampling equipment and a trip blank. The rinsate and the trip blank did not contain any contaminants. The split sample analyzed is included in Table 5. Three QA samples were sent to the Corps of Engineers Missouri River Division (MRD) Laboratory in Omaha, Nebraska for analysis. These included a rinsate and trip blank. The rinsate sample did not contain any contaminants, however, the trip blank contained methylene chloride which is a common laboratory contaminant. The split sample contained a lower concentration of lead (0.06 mg/l) than was reported by the Contractors Laboratory (0.27 mg/l).

9. The sample analysis indicates that the groundwater contains arsenic, barium, cadmium, chromium and lead in trace amounts,

but above Safe Drinking Water Act standards. However, no total petroleum hydrocarbons were detected in any of the groundwater samples, including the driller's water. Volatile organic compounds were not detected in the groundwater at former NIKE Battery C-54.

10. SOILS

A summary of the soil analysis is presented in Table 4.

Concentrations of metals found in the soil samples were compared to average concentrations of elements in U.S. soils as reported by Shacklette, et al. (1971). Arsenic, barium, cadmium, chromium, lead and silver were detected in low concentrations in all five soil samples. The background sample (SS-04) contained all of these metals in roughly similar concentrations. Barium and chromium in all samples were within the range of the average U.S. soil concentrations. Cadmium and lead exceeded the average concentration in all but one sample; but concentrations were well within the range of U.S. soil concentrations. SS-03 contained levels of arsenic and mercury that exceeded the average concentration but which were within the range of average U.S. concentrations.

11. All samples contained trace amounts of total petroleum hydrocarbons except for sample SS-02. Sample SS-04 had the greatest value, 80 mg/kg (36 mg/kg in the duplicate).

12. Toluene, which is a common laboratory contaminant, was the only volatile organic compound detected in the soil samples (Table 4). Soil samples SS-05 (QC split from SS-01) contained 23 ug/kg of toluene and the background soil sample (SS-04) contained 51 ug/kg of toluene. The levels of both petroleum hydrocarbons and toluene found in the background soil sample (SS-04) is probably due to the Village of Orland Park's use of the site.

13. The QC samples analyzed include a rinsate from the soil sampling equipment and a trip blank. Neither of these samples contained detectable contamination. The split sample analyzed is included in Table 4. Three QA samples were sent to the COE MRD laboratory for analysis. These included a rinsate, a trip blank and a split sample. The rinsate and the trip blank did not contain detectable contamination.

14. The split sample that the COE MRD laboratory received showed slightly higher concentrations in all detected compounds except for lead. The higher value for toluene detected by the COE MRD laboratory could be the result of laboratory contamination. These variations are possible with soil samples composited and split in the field.

15. SURFACE WATER

The results of the inorganic analysis for surface water were



compared to Maximum Contaminant Levels (MCL) which are enforceable standards for drinking water. MCLs are enforced as Primary Drinking Water Regulations. The concentration of metals which were detected do not exceed MCLs in any of the samples.

16. Total petroleum hydrocarbons were detected in only one sample SW-03 (0.3 ppm) and no volatile organic compounds were found in any of the surface water samples.

17. The QC samples analyzed include a rinsate from the surface water sampling equipment and a trip blank. Both the rinsate and trip blank did not contain any contaminants. The split sample analyzed contained metals below the MCLs for drinking water and did not contain any total petroleum hydrocarbons or volatile organic compounds. Three QA samples were sent to the Corps of Engineers Missouri Division (MRD) Laboratory in Omaha, Nebraska for analysis. These included a rinsate and a trip blank. The rinsate and trip blank did not contain any contaminants. The split sample contained similar concentrations of inorganic compounds similar to those reported to the Contractor Laboratory.

18. SILLO WATER

The results of the inorganic analyses for silo water were compared to Maximum Contaminant Levels (MCL) which are enforceable standards for drinking water. MCLs are enforced as

Primary Drinking Water Regulations. Table 6 contains a summary of the occurrence and concentration of metals which were detected and those that exceed MCLs in none or more samples.

19. The analysis of silo water sample (SW-01) from launch unit #2 showed elevated amounts of cadmium, chromium, lead and silver which greatly exceed the MCL for each of the compounds (Table 6). Cadmium was detected at 0.12 mg/l and chromium was detected at 0.11 mg/l. Both are above their respective MCLs of 0.01 and 0.05 mg/l. Lead was detected at 27 mg/l or 540 times the MCL for lead (0.05 mg/l). SW-02 showed only trace amounts of metals which were well below the MCL (Table 6).

20. Total petroleum hydrocarbons were detected in each of the silo water samples (Table 6). The silo water sample from launch unit #2 contained the highest concentration (54 ppm) while the samples from launch unit #3 were lower. No volatile organic compounds were detected in either of the two silo water samples (Table 6).

21. The QC samples analyzed included a rinsate from the silo water sampling equipment and a trip blank. The trip blank did not contain any contaminants and the rinsate contained 1.0 mg/l of total petroleum hydrocarbons. The split sample analyzed is included in Table 6. Three QA samples were sent to the Corps of

Engineers Missouri River Division (MRD) laboratory in Omaha, Nebraska for analysis., These included a rinsate and a trip blank. The rinsate did not contain any contaminants. However, 1.5 mg/l of methylene chloride which is a common laboratory contaminant was detected in the trip blank.

22. The split sample (SW-10) obtained from launch unit #2 showed much lower concentrations of inorganic compounds than those detected by the Contractors Laboratory. The COE MRD laboratory detected 10 times the amount of total petroleum hydrocarbons (545 ppm) that was detected by IT (54 ppm). The Contractors lab has checked and confirms their value.

23. The sample analysis indicates that the silo water in launch Unit #2 contains elevated amounts of cadmium, chromium, lead, and silver, all of which occur above Safe Drinking Water Act Standards. Total petroleum hydrocarbons were also detected in samples from both launch units. Volatile organics were not detected in the silo water from either launch unit.

24. CONCLUSIONS & RECOMMENDATIONS

Based on soils, groundwater and silo water analytical results from samples obtained from the former NIKE Battery C-54 site, there are indications that contamination is present at the site. Elevated levels of metals are present in the unfiltered

groundwater of the monitoring wells installed for this evaluation and in the silo water of launch unit #2. Petroleum hydrocarbons were found in three of the four soil samples and both silo water samples from launch units #2 and #3. Both surface water samples contained metals at concentrations below the MCL for drinking water and petroleum hydrocarbons were detected at trace levels in one sample.

25. Cadmium, chromium and lead were found at concentrations exceeding the MCLs in the unfiltered groundwater from both wells (MW-01, MW-03). Arsenic was detected at levels above the MCL in MW-03. Petroleum hydrocarbons and volatile organic compounds were not detected in any of the groundwater samples. Soil samples SS-01, SS-03 and SS-04 (background) contained some total petroleum hydrocarbons. Toluene, a volatile organic compound, was detected in two of the four soil samples (SS-04 and SS-05).

26. The silo water sample from launch unit #2 (SW-01) showed elevated concentrations of cadmium, chromium, lead and silver in unfiltered samples which exceed the MCL for each compound. Petroleum hydrocarbons were detected in all silo water samples from both launch units #2 and #3. Volatile organic compounds were not found in any of the silo water samples.

27. The metals analysis of the groundwater and silo water samples was performed using unfiltered samples. The presence of suspended solids in both ground and silo water samples could have contributed to a higher concentration of metals than were actually present as dissolved metals in the water. However, possible sources of metals contamination that may have led to the high concentrations in both silo water and groundwater include materials and debris from DOD and Orland Park Public Works Operations above ground and from within the silos themselves. The total petroleum hydrocarbons detected within the silo water may have been a result of petroleum spills above ground that were carried in by runoff water or from the hydraulic fluid used by the silo elevators. The lack of petroleum hydrocarbons in the groundwater analyzed during this evaluation suggests that the petroleum hydrocarbons detected in the soil samples from shallow borings (3') may have originated from localized surficial spills.

28. Results from the evaluation of site C-54 indicate that contaminants are present at the site. It is difficult to define the source(s) of these contaminants due to the length of time which has elapsed since the DOD's use of the site as well as the uses the Village of Orland Park has found for the site.

29. Both groundwater and silo water should be resampled and analyses conducted on filtered and unfiltered samples.

30. COST ESTIMATE

Resampling of wells and silos with analyses for metals on filtered and unfiltered samples - \$10,000.

TABLE 4  
SUMMARY OF SOILS ANALYSIS\*  
FORMER NIKE BATTERY C--54  
ORLAND PARK, ILLINOIS

Parameter	C-54-SS01	C-54-SS02	C-54-SS03	C-54-SS04	C-54-SS05	Average Concentrations of Elements in US Soils <sup>(4)</sup>	
	Acid Storage Shed	Refueling Area	Near Northern Silo	Near Site Entrance	QC Split of SS-04	Average Concentration	Concentration Range
<u>Metals</u>							
(mg/kg) <sup>(1)</sup>							
Arsenic	8/8 <sup>(2)</sup>	9	90	6	14	5.2	<0.1097
Barium	70/60	40	60	60	40	490	70-5,000
Cadmium	2.7/2.6	3.7	1.7	2.3	1.3	0.66 <sup>(3)</sup>	0.01-22 <sup>(5)</sup>
Chromium	18/17	18	14	19	11	37	3-2,000
Lead	18/18	24	23	16	22	16	<10-700
Mercury	ND	ND	0.3	ND	ND	.058	<0.01-46
Silver	1/1	3	ND	1	ND	---	---
<u>Total Petroleum</u>							
<u>Hydrocarbons</u>							
(mg/kg) <sup>(1)</sup>							
	29	ND	72	80	36		
<u>Volatile Hazardous</u>							
<u>Substance List Compounds</u>							
(ug/kg) <sup>(3)</sup>							
Toluene	ND	ND	ND	51	23		

(1) mg/kg = milligrams per kilogram or parts per million

(2) This sample was analyzed in duplicate

(3) ug/kg = micrograms per kilogram or parts per billion

(4) Shacklette, et al., "Elemental Composition of Surficial Materials in the Conterminous United States." Geological Survey Professional Paper 574-D, United States Government Printing Office, Washington, DC, 1971.

(5) Friberg, L.M., et. al., 1974, Cadmium in Environment, 2nd Edition CRC Press.

ND The compound was not detected at or above the indicated detection limit.

\* The complete analytical data package is presented as Appendix F.



DEPARTMENT OF THE ARMY  
CHICAGO DISTRICT, CORPS OF ENGINEERS  
111 NORTH CANAL STREET  
CHICAGO, ILLINOIS 60606-7206

REPLY TO  
ATTENTION OF

CENCC-ED-P (200-1a)

17 MAY 1991

MEMORANDUM FOR Commander, U.S. Army Corps of Engineers, North  
Central Division, Attention: CENCD-PE-ED-TM  
(R. Warda), 536 South Clark Street, Chicago,  
Illinois 60605-1592

SUBJECT: DERP FUDS Inventory Project Report (INPR) for Site No.  
EO5IL007300, Former NIKE Site C-54 Launch Area, Orland Park,  
Illinois

1. This INPR describes the DERP FUDS Preliminary Assessment (PA) at the Former NIKE Site C-54 Launch Area. The site survey summary sheet and a site map are at enclosure 1.

2. The Chicago District has determined that the site was formerly used by the Department of Defense. A recommended Findings and Determination of Eligibility (FDE) is at enclosure 2. The Real Estate information has been reviewed by the Chicago District Real Estate Division.

3. A building demolition/debris removal (BD/DR) project is proposed for remediation. Recommendations regarding a possible hazardous and toxic waste project (HTW) will be made at a later date pending resampling of the groundwater and silo water at the site. The project summary sheets and DD Form 1391 for BD/DR are at enclosure 3.

4. The following proposals are presented:

a. The enclosed FDE be approved.

b. The INPR be forwarded to CEHND for the PA file.

c. The INPR be forwarded to CEMP requesting approval of the BD/DR project. A RA project for BD/DR can be initiated in the third quarter FY92 if the project is approved and RD funding is provided to the Chicago District by 3 February 1992. The funding and schedule data on these proposed projects are included in both the FY92 and 5 year workplans.

3 Encls

  
RANDALL R. INOUE  
LTC, EN  
Commanding